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The Case for Using Learning Designs with Pre-Service Teachers

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Abstract: This research paper documents what learning designs, teaching methods and teaching activities were most commonly used by pre-service teachers and experienced teachers as observed by the pre-service teachers when on their practicum visits in schools. The paper also outlines the benefits of documenting learning designs so that good teaching practice might be shared. Using case study methodology, the authors also report how infrequently the pre-service teachers participated in discussions about learning designs, teaching methods and teaching activities with their supervising teacher and/or other experienced teachers. The findings demonstrate that while the pre-service teachers recognized the benefits of documenting and sharing learning designs, experienced teachers did not regularly engage in these types of discussions.

Introduction

A *learning design* is a descriptive framework that allows teachers to unpack the learning design process by separating the content from the pedagogy (Cameron, 2009). The pre-service teachers surveyed in this project recognized that reusing the learning designs of another experienced teacher was a means of sharing innovation and best practice, whilst at the same time conserving resources. There are well-tested learning design scaffolds that could provide these novice teachers with the opportunity to gain the theory, structure and outline of innovative teaching strategies necessary for implementation. However, as the results from this study found, our pre-service teachers are not being given the opportunity to fully explore this in their practicum schools. Nor are they being given the opportunity to discuss and reflect on their own original learning designs and the designs of others to gain confidence and skills in teaching (Cameron, 2006; Kearney, 2007).

While experienced teachers in schools recognize the benefits of sharing learning designs, progress still needs to be made toward changing the prevailing culture and encourage widespread sharing and discussion of learning designs. It seems reasonable, therefore, to suggest that the discussion of good teaching methods and exemplary learning designs should be encouraged and promoted with the pre-service teachers during their school visits.

What is a Learning Design?

A learning design "documents and describes a learning activity in such a way that other teachers can understand it and use it in their own context. Typically a learning design includes descriptions of learning tasks, resources and supports provided by the teacher"(Donald, Blake, Girault, Datt, & Ramsay, 2009). It enables the teacher to explicitly describe the conceptual and practical underpinnings of a sequence of educational activities (Dalziel, 2008). As seen from the comments below, discussing and sharing earning designs encourages teachers to reflect in a deeper and more creative way and see how they design and structure activities for learners (Britain, 2004).

> "It made me look at the content from a learner's perspective, so that I could ensure that the elements would be engaging and easy to understand, as well as accomplishing the learning that I want the learner to achieve"
> (teacher comment in Masterman, 2009, p. 233)
> "I thought about the place of the teacher and the role of the teacher"
> (teacher comment in Masterman, 2009, p. 233)
> "I've never really thought about all of this"
> (teacher comment in Bennett et al, 2008, p. 36,315)

A *generic learning design* describes the sequence and nature of activities and accompanying resources and supports in a context, discipline and content-independent manner (Bennett, Lockyer, & Agostinho, 2004). The concept behind reusable generic learning designs is that an activity once specified clearly enough is reusable with different content, merely by changing the resources used. Reuse of learning designs is an attractive idea and has led to work on approaches to design for learning, activity templates and learning patterns to help understand how to describe activities. These activity descriptions will have greater value for reuse if they can be transferred to new contexts with changed content and changed sets of tools (McAndrew, Weller, & Barrett-Baxendale, 2006).

The discussion and sharing of using learning designs makes the relationship between practice and the underpinning theory clearer, and, as Conole and Fill argue (2005), this enables teachers to make more theoretically informed choices of tools and resources used to support learning. The focus of the framework is not the discipline content but the activities employed by the teacher to help students understand that content, acknowledging that students learn better when they are actively engaged. Learning design can describe many different pedagogies rather than prescribe any one specific teaching or learning strategy (Koper, 2001; Dalziel, 2009).

Once teachers realise they can separate content from the learning design, they can be introduced to the concept of a generic learning design. It is proposed that generic learning designs could serve as a pedagogical framework to support teachers in creating learning experiences, with the teacher adapting the learning design, specifying the particular activities and choosing or creating the resources and supports needed to suit his/her learners (Bennett et al, 2004; Cameron & Campbell, 2010).

However effective a learning design may be, it can only be shared with others through a representation. The issue of representation of learning designs is, then, central to the concept of sharing and reuse. To adapt, share and/or reuse learning designs, they will need to be documented.

Why Document Learning Design?

There is perhaps no other single function that a teacher must perform that threatens to take as much time, effort, and energy outside of the classroom as the writing of a lesson plan (Kelly, 1997). A lesson plan is a professional document explaining what will happen in a particular timeframe (Whitton, 2004). Traditionally, a written lesson plan is how learning design has been documented and the practice of learning design, although a relatively new term, has been implemented by classroom teachers for decades. Lesson planning involves the formulation of learning goals and objectives and the design of teaching and learning resources and strategies that are best suited to achieve these objectives (Kinchin & Alias, 2005). It involves sequencing appropriate learning activities in a logical order and designing assessment tasks and lesson evaluation criteria (McCutcheon, 1980).

A lesson plan can include details such as location; structure and sequence; duration; participants; acceptable student behaviour; instructional moves; and content and materials (Yinger, 2001). Although a variety of written lesson plan formats and approaches are in use, the dominant model is a linear one, which begins with the specification of objectives and ends with a lesson evaluation (John, 2006). This approach has varied little from its introduction by Tyler's *"Basic principles of curriculum and instruction"* which was published in 1949. This model has tended to encourage conventional, structured and linear approaches to learning, whereas educational theory has advanced the practices of more student-centred, constructivist and authentic approaches to teaching and learning (Oliver & Littlejohn, 2006) in the last decade.

Although statutory bodies determine what students should learn and at what stage, it is still very much the prerogative of the classroom teacher, within the framework decided in the school as a whole, as to what students do each day. Documenting learning can help teachers prepare for instruction; enables them to consider different options and to be more flexible; assists with evaluating instruction; and helps them to build up confidence in their teaching (Marsh, 2004).

All these features are justification enough for the documentation of learning design. As well as having a practical advantage of documenting a learning design is the ability to share it and/or reuse it. An aim of learning design is to find a shared language for describing educational activity structures that can be easily used by typical teachers (Dalziel, 2009).

Documenting a learning design allows learning activities to be sequenced or otherwise structured into a learning workflow to promote more effective learning (Britain, 2004). Learning designs can predetermine the order in which the content will be presented, how it will be integrated in learning support services, how it will be sequenced, and how it will be assigned to students in a lesson (Knight, 2004).

The field of learning design holds the promise of providing teachers with a framework that will enable them to design high quality, effective and innovative learning experiences for their students (Cameron & Campbell, 2010; Masterman, 2009). By creating the possibility of deconstructing their existing teaching strategies; aiding reflection on their own practice; documenting and scaffolding innovative learning activities; and sharing and reusing expert practice, learning design has the potential to improve the quality of teaching. A key challenge for the future of Learning Design is to continue to bridge the gap between rich, descriptive models and technologies and the everyday practice and understanding of teachers.

Why Use Learning Designs With Pre-Service Teachers?

A number of teaching strategies have been highlighted in the literature as being "best practice" (Baird, 1986; Biggs, 2003; Cameron & Campbell; 2010; Dodge, 2001; Hmelo-Silver, 2004) To appeal to a variety of learning styles, teachers could adopt a variety of pedagogical approaches and they explicitly acknowledge any discipline specific skills. These include encouraging higher order thinking; practicing reflection (both students and staff) and adopting student-centred teaching methods. These can be daunting tasks for the pre-service teacher.

Expert teaching requires mastering a variety of teaching techniques and being able to encourage most students to use the higher cognitive level processes that the more academic students use spontaneously (Biggs, 2003). This type of teaching is not about transmission of facts, concepts and principles; it is about knowing the kind of learning activities that are required for students to reach a deep understanding of their discipline. To achieve this level, teachers will need to be shown how to question their teaching ideas and practices – in a supportive and helpful way and the documentation of learning designs has been shown to provide the necessary scaffold to do just that.

Good teaching supports activities that are appropriate to achieving the learning objectives, thereby encouraging students to adopt a deep approach. Gibbs (1996) and Biggs (2003) both cite factors which have been shown to push students towards a surface approach to learning. These include:

- Time stress usually brought about by a heavy workload; high class contact hours; an excessive amount of course material; an emphasis on coverage;
- An assessment system which tests and rewards only low level outcomes, rewards students for recalling isolated scraps of information and causes undue anxiety;
- Lack of choice over subjects, choice of topics to pursue in depth and method of study; and
- A classroom and departmental climate which promotes negativity and cynicism.

In order alleviate at least some of these problems, Mayes & de Freitas (2004) report an increasing focus on the design of student-centred methods and environments: research on problem-based, project-based, enquiry-oriented pedagogies producing constructivist tasks and environments, placing emphasis on reflection and feedback. Students can then be given problems that drive them to explore the full range of content. The focus here though is not on students memorizing all the content there is to know, but identifying where they can find the information they need to solve specific problems, and focusing on the development of skills, such as information retrieval and analysis, as well as problem solving. Thus, as the knowledge base changes, learners have learned the skills they need to continue to learn and keep up with the subject matter (Bates, 2003).

However, student-centred learning is quite a divergence from the traditional transmission method of delivery commonly used in the higher education environment and, although its implementation is well supported in the literature, its initial execution can be quite a daunting prospect. It has been suggested (Heathcote, 2006) that a well designed learning design could provide support to a teacher attempting such a transformation in teaching.

Generic learning designs could serve as a pedagogical scaffold to support pre-service teachers in creating new learning experiences, with the teacher adapting the learning design, specifying the particular activities and choosing or creating the resources and supports needed to suit his/her students (Bennett, Lockyer, & Agostinho, 2004).

This represents new possibilities for increasing the quality and variety of teaching and learning (Britain, 2004), particularly where pre-service teachers with little teaching experience are required to prepare learning designs. The possibility of sharing and modelling exemplar lesson designs can provide them with a scaffold to help them design high quality learning environments (Bennett, et. al., 2006). However, if the reuse of learning designs is to be realised, then it is likely to be because the learning designs provide savings in time and/or effort so are more convenient than creating designs from scratch. Therefore, they are likely to be reasonably complex and pedagogically rich, since relatively simple designs can be easily created, thus reducing the benefits of reuse (McAndrew, et. al., 2006).

Methodology

In this study, the authors analysed and compared the teaching practices of 190 pre-service teachers and the experienced teachers at their practicum schools (which represented 91% of the various cohorts).

Three different groups were surveyed: one cohort from Macquarie University and two from The University of Notre Dame Australia, both located in Sydney, Australia. These two universities draw on a very broad range of schools for pre-service teacher practicum. City, country, single-sex and co-educational schools were all represented in the survey. The wide-ranging nature of these schools ensured the responses that were received were typical of many schools located within the state of NSW.

All the pre-service teachers who participated in the survey had at least two years' educational theory instruction experience and were familiar with the learning design concept and its applications before going out on their school placement.

The pre-service teachers were given time in tutorials to complete the pen and paper survey. As per the university ethics submissions, it was administered and collected anonymously.

Taking a case study approach, the authors addressed the following questions. Because the synonymous use of the terms "learning designs", "teaching methods" and "teaching activities" in general usage, all terms were included in each question to ease confusion. Capitalisation was also used to emphasise the differences between the otherwise very similar questions.

- What learning designs, teaching methods and teaching activities do pre-service teachers use in the classroom?
- What learning designs, teaching methods and teaching activities are MOST COMMONLY used by other teachers in their school placement?
- What do you consider are the BENEFITS of using these learning designs, teaching methods and teaching activity scaffolds?
- What do you consider are the LIMITATIONS of using these learning designs, teaching methods and teaching activity scaffolds?
- Do pre-service teachers on practicum discuss and share learning designs, teaching methods and teaching activities with their supervising teacher or other teachers?

Results and Discussion

Types of Learning Designs Used by Pre-Service Teachers in their Practicum Classrooms

The pre-service teachers reported they predominantly used three learning designs (refer Table 1). These were:

Whole Class Discussion

This involves the teacher orchestrating a general discussion with the whole class group. The most common reasons for using a discussion are to help students solve a problem or to encourage them to explore an open-ended question (Killen, 2009). Whole class discussion can encourage students to contribute to the process and content of the lesson which encourages their interest and motivation in the content.

Small group discussion

This requires two or more students to work together without direction supervision or intervention by the teacher, for at least part of the time. The teacher structures the learning environment so that the students can interact productively with only indirect guidance (Killen, 2009). It is common to conclude the lesson with some form of sharing or debriefing that involves the whole class.

Brainstorming

This encourages students to think about the problem to be solved by contributing ideas. The most important reason for using students' ideas is that it enables the teacher to build explicitly on the students' prior knowledge (Killen, 2009).

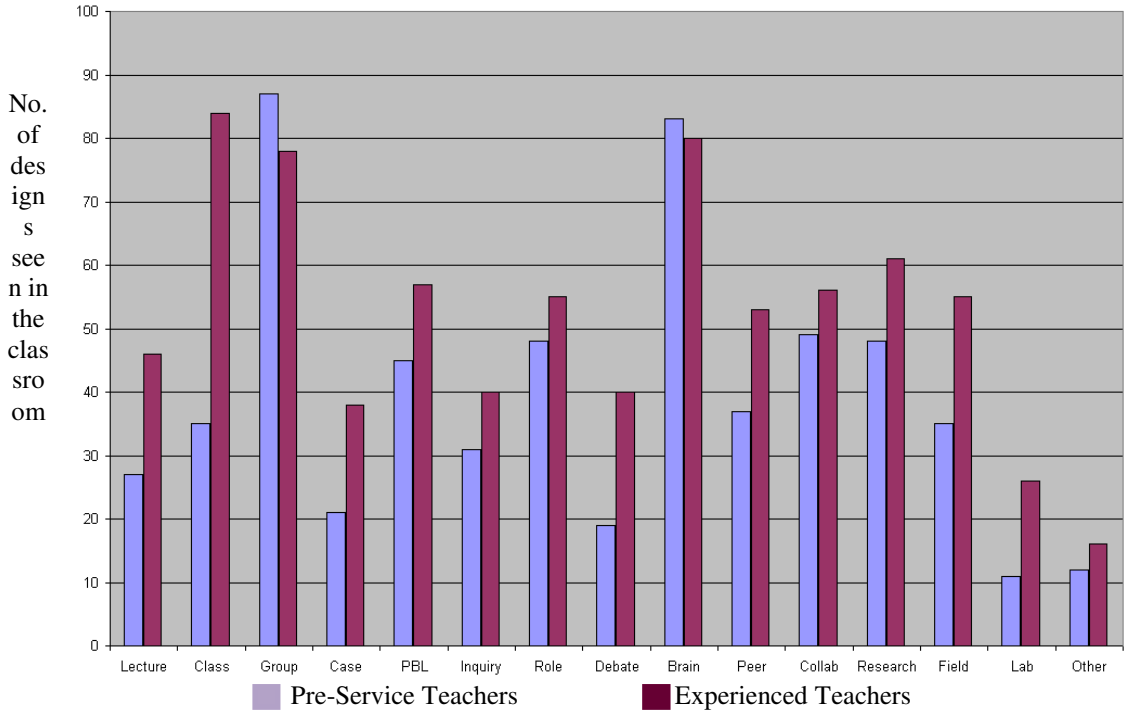

Table 1: Teaching Strategies used in the Classroom

What Other Teachers are Using in their Classrooms

The pre-service teachers reported the experienced teachers in their practicum school used a much wider variety of learning designs (refer Table 1). As with the pre-service teachers themselves, whole class discussion, group discussion and brainstorming were widely used, but the following teaching strategies were also commonly employed: Problem-based learning; Role play; Peer tutoring; Collaborative learning; Research; and Field trip/excursion were also widely used.

While on practicum if pre-service teachers are exposed to a variety of teaching methods, it gives them a greater range of experiences in the classroom Initially, the pre-service teachers reported they were much more comfortable with transmission (didactic)-style learning designs and it took some experience and practice for novice teachers to feel they can use other types of learning designs.

What did the Pre-Service Teachers Consider were the Benefits of Using a Variety of Learning Designs, Teaching Methods and Teaching Activity Scaffolds?

Documenting learning designs, teaching methods and teaching activities can facilitate the sort of rich learning experience based around an activity approach that learning design encourages, over the more content, instructivist approach afforded by many existing learning management systems. The pre-service teachers' comments about the benefits (in italics) were consistent with those found in the literature. Learning design scaffolds:

- were particularly useful in the initial phase of learning design to trigger thinking about new approaches, activities and strategies (Bennett, Lockyer, & Agostinho, 2004).
  "looking at a new learning design opens one's mind up to ideas and solutions to problems, even if the final lesson looks nothing like the initial prompt."
- improve instruction design efficiency, as teachers can apply structure decisions across multiple designs (Schneider, 2005).
  "having the structure there keeps me on track when designing my own lesson that I know is likely to interest and motivate the students in the classroom. Then by varying the activities, I can simply create a new lesson in no time at all."
- provide exemplar models for teachers to reuse, and while a number of the pre-service teachers recognised that these scaffolds did not document learning designs specifically, they provided the basic structure on which a lesson design can readily be built.
  "The examples I used increased student participation and engaged them. It also incorporated a variety of media. It was a well designed structure with an emphasis on student centred learning. It also introduced collaborative learning, where students learned by engaging with their peers."
- illustrate how effective learning designs are constructed.
  "the design helped me understand how students would learn off each other. It gave me a deeper understanding about how what was being taught could be organised. It carefully guided me through the role play, which is something I had never used before in my teaching."

What did the Pre-Service Teachers Consider were the Limitations of Using these Learning Designs, Teaching Methods and Teaching Activity Scaffolds?

- Learning designs might start to look the same. If a particular learning design is over-used with the same students, they will be come bored with the sameness of their lesson designs. If a particular generic design is over-used with the same students, they will become bored with the sameness of their lesson designs (Sneider, 2005).
  "I worry if I keep using this that my lessons will be boring and repetitive. Using the same activities all the time."
- This process may discourage innovation and could promote dissatisfaction in creative teachers.
  "once I looked at these designs, I couldn't think of anything else. All my lessons became just like the learning designs we looked at – nothing new."
- The efficiency of such a system has not yet been determined considering the time it takes to document a learning design scaffold well.
  "writing these involves lots of prep work for the teacher. Not sure in the long run it saved me any time."
- The limitations of a generic service approach have not yet fully explored. Generic learning designs can be difficult to interpret as a standalone resource (Bennett, Lockyer, & Agostinho, 2004). While it is possible to derive a list of generic functions from a range of tools providing the same service, by necessity this ignores differences between them. A specific instance can always provide a richer example than one that is created to be used in multiple contexts.
  "none of the examples were in my subject area and I found the generic ones hard to work out what was going on."

Experienced teachers have developed their own pedagogical style and knowledge of what learning designs work well for them and their students. They do not always want to inherit another's pedagogical style because they are confident in their own. These teachers want to

adapt rather than adopt learning designs which means they want tools that can scaffold their lessons, but are readily editable.

Sharing Learning Designs

A majority (82%) of the pre-service teachers who participated in the study agreed there are benefits for teachers having access to a range of learning designs from which they can trial and modify for their own contexts. The most common advantage mentioned was that they provided a variety of exemplary designs which could be easily adapted. The benefits of sharing learning designs are:

- Scaffolding and mentoring for teachers new to the profession;
- Inspiration for teachers wishing to redevelop or redesign the curriculum;
- Access to archived and catalogued learning designs;
- Greater exposure to models of best practice;
- Foundation for more sustainable practices – conservation of time and effort;
- Development of resources which support and promote communities and professional and student networks; and
- Explicit copyright licensing agreements which support equitable sharing practices. (adapted from Philip & Cameron, 2008).

The pre-service teachers were also asked if they discussed learning designs, teaching methods and teaching activities with their Supervising Teacher or other teachers. Table 2 below reports that from the 100 pre-service teachers who answered the question, 45% of responses state they rarely or never discuss learning designs.

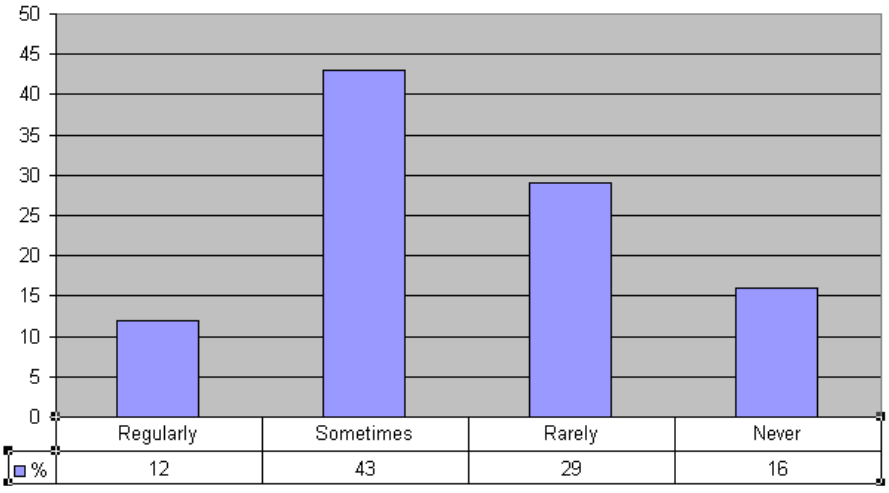

Table 2: Number of Pre-Service Teachers Discussing Learning Designs, Teaching Methods and Teaching Activity with Supervising Teacher or Other Teachers

Conclusion

This study demonstrated that pre-service teachers see benefits in discussing and sharing learning designs and they stated they were willing to share their own experiences. The benefits they described included process support (scaffolding, inspiration and mentoring); access to a variety of learning designs (exemplary and works in progress); contribution to sustainable practices (time, effort and resources); and engagement with an emerging community of practice. A collaborative approach to discussing, creating and refining learning designs was considered beneficial. Those pre-service teachers who shared and discussed their learning designs with their Supervising Teachers commented that the need to explain, justify and defend their pedagogical decisions strengthened the design development. This was a powerful and positive experience for them.

The pre-service teachers reported that teaching staff in schools seem constrained by barriers that influence their ability to discuss and share their learning designs. This study shows that progress still needs to be made towards changing the prevailing culture, at least from the point of view of the pre-service teachers in this study. Encouraging discussion and sharing of good teaching practice early in a pre-service teacher's career, and experienced teachers modelling it as everyday practice, may encourage them to be more open to this practice in their professional lives, and encourage others in the wider school community to contribute in the same way.

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